

Monitoring Site began on January 19, 2007 and continued until April 4, 2007. A total of 88 samples including blanks were collected.

#### **4.3 Sample Preparation and Collection**

All denuders and filters for the ADS were prepared at the TPB Laboratory for field sampling following EPA Compendium Method IO-4.2 and procedures. As previously discussed, Weekly Air Particulate samplers were installed at the ADS Monitoring and Off-Axis Monitoring sites. The samplers operated continuously, collecting 24-hour samples for acidic and basic gases and fine particulate matter from midnight to midnight, for six consecutive days. On the seventh day, all samples were collected and a new set of denuders (8 assemblies) was installed at each sampling site. Sample collection resumed at midnight on the seventh day to initiate the next six consecutive day period of continuous 24-hour sampling. This schedule continued for the duration of the study resulting in a total of 22 cycles for the ADS Monitoring Site and 11 cycles for the Off-Axis Monitoring Site. Each sample assembly consisted of a filter pack (one each, Teflon™ and nylon filters) for fine particulate matter and acidity, and two denuders, one for acidic gases and the other for basic gases. Eight denuder assemblies were required because the first six assemblies were used for collecting samples for consecutive 24-hour periods, the seventh assembly was used for the field blank, and the eighth assembly was used as a trip blank. Chemical analysis of the field blank was considered an indication of passive adsorption of analytes under study during assembly and storage at the TPB Laboratory, transportation to the field and/or during installation in the ADS. A trip blank, sealed at the TPB Laboratory was included with the denuder assemblies from the lab to the field and back to assess if any analytes could be attributed to denuder preparation at the lab and/or during transportation. One trip blank was assigned per sampling site for each sample period.

The annular denuder sampling system collects gaseous nitric acid ( $\text{HNO}_3$ ), nitrous acid ( $\text{HNO}_2$ ), hydrochloric acid ( $\text{HCl}$ ), hydrofluoric acid ( $\text{HF}$ ), sulfur dioxide ( $\text{SO}_2$ ), ammonia ( $\text{NH}_3$ ), particulate sulfate ( $\text{SO}_4^{2-}$ ), particulate nitrate ( $\text{NO}_3^-$ ), particulate ammonium ( $\text{NH}_4^+$ ) and other acidic particles. The acidic gases together with sulfur dioxide were collected on the sodium carbonate ( $\text{Na}_2\text{CO}_3$ ) coated denuder and ammonia was collected on the citric acid denuder. Particulate sulfate, nitrate and ammonium were collected on the Teflon™ filter. Some of the particulate nitrate from the Teflon™ filter decomposes/evaporates over the collection period and is therefore collected on the nylon filter. Particulate nitrate from the Teflon™ filter is quantified